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Er R. Witt
Attorney for Applicants

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/849,347 Confirmation No.: 6692
Applicant : Robert H. Burgener, II et al.
Title : FABRICATION OF P-TYPE GROUP II-VI
SEMICONDUCTORS
Filed : May 19, 2004
TC/A.U. : 2822
Examiner : Kevin M. Picardat
Docket No. : 3398.2.8
Customer No. : 21552

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
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TRANSMITTAL OF SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Transmitted herewith is an Information Disclosure Statement disclosing information which has come to the attention of applicants and/or their attorneys and is being submitted so as to comply with the duty of disclosure set forth in 37 C.F.R. § 1.56. In accordance with 37 C.F.R. § 1.97(c), the enclosed Statement is being filed before the mailing date of either a final action or a notice of allowance and is accompanied by credit card payment form in the amount of One Hundred Eighty Dollars (\$180.00) to cover the fee set forth in 37 C.F.R. § 1.17(p).

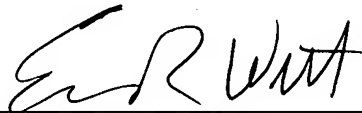
Neither applicants nor their attorneys make any representation that any information disclosed herein may be "prior art" within the meaning of that term under 35 U.S.C. § 102 or §

103. Moreover, pursuant to 37 C.F.R. § 1.97, the filing of this Information Disclosure Statement shall not be construed as a representation that a search has been made or as an admission that the information cited herein is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

In accordance with 37 C.F.R. § 1.98, transmitted herewith are:

1. A completed copy of Forms PTO/SB/08a and PTO/SB08b "Information Disclosure Statement by Applicant" listing the patents, publications and other information being submitted for consideration; and
2. A legible copy of each patent, publication and other item of information in written form listed on the enclosed Forms PTO/SB/08a and PTO/SB/08b, except for copies of U.S. patents and published U.S. patent applications which are not required for applications filed after June 30, 2003.

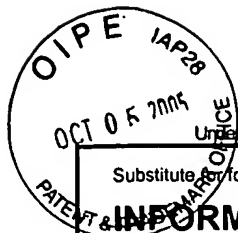
Respectfully submitted,



Evan R. Witt
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Date: October 3, 2005

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) Sheet 1 Of 1	Complete if Known	
	Application Number	10/849,347
	Filing Date	May 19, 2004
	First Named Inventor	Robert H. Burgener, II
	Group Art Unit	2822
	Examiner Name	Kevin M. Picardat
Attorney Docket Number	3398.2.8	

U.S. PATENT DOCUMENTS					
Examiner Initials *	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code ² (if known)			
	U1	US-6,838,308 B2	01/2005	Haga, Koichi	
	U2	US-6,707,074 B2	03/2004	Yoshii et al.	
	U3	US-5,331,655 A	07/1994	Harder et al.	
	U4	US-3,864,725	02/1975	Merrin, Seymour	
	U5				
	U6				
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	U8				
	U9				
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	U13				
	U14				

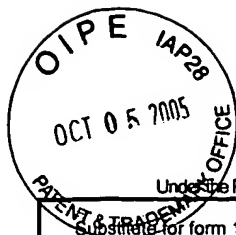
FOREIGN PATENT DOCUMENTS						
Examiner Initials *	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)				
	F1					
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 Of 9

Complete if Known

Application Number	10/849,347
Filing Date	May 19, 2004
First Named Inventor	Robert H. Burgener, II
Group Art Unit	2822
Examiner Name	Kevin M. Picardat
Attorney Docket Number	3398.2.8

NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	O1	AULBUR, W.; Density Functional Theory: Basic Ideas & Applications; Ohio State University.	
	O2	LOOK, D.C., and CLAFLIN, B.; P-type doping and devices based on ZnO; 08/2003; Wiley-VCH Verlag GmbH & Co.	
	O3	ZUNGER, A.; Practical Doping Principles; NCPV and Solar Program Review Meeting 2003; pp. 831-835.	
	O4	ZHANG, S.B., WEI, S.H., and ZUNGER, A.; Intrinsic n-type versus p-type doping asymmetry and the defect physics of ZnO; Physical Review B; 01/31/2001; pp. 075205-1 - 075205-7; Volume 63; The American Physical Society.	
	O5	LIMPIJUMNONG, S., ZHANG, S.B., WEI, S.H., and PARK C.H.; Doping by Large-Size-Mismatched Impurities: The Microscopic Origin of Arsenic- or Antimony-Doped p-Type Zinc Oxide; Physical Review Letters; 04/16/2004; Volume 92, Number 15; The American Physical Society.	
	O6	YAMAMOTO, T., and KATAYAMA-YOSHIDA, H.; Solution Using a Codoping Method to Unipolarity for the Fabrication of p-Type ZnO; Japanese Journal of Applied Physics; 02/15/1999; pp. L 166-L 169; Volume 38; Japanese Journal of Applied Physics Publication Board.	
	O7	PARK, C.H., ZHANG, S.B., and WEI, S.H.; Origin of p-type doping difficulty in ZnO: The impurity perspective; Physical Review B; 08/05/2002; pp. 073202-1 - 073202-3; Volume 66; The American Physical Society.	
	O8	TSUKAZAKI, A., ATSUSHI, T., OHTOMO, A., ONUMA, T., OHTANI, M., MAKINO, T., et al; Repeated temperature modulation epitaxy for p-type doping and light-emitting diode based on ZnO; Nature Materials; 01/2005; pp. 42-46; Volume 4; Nature Publishing Group.	
	O9	NONAKA, M., MATSUSHIMA, S., MIZUNO, M., and KOBAYASHI, K.; Electronic Structure of Group III Elements Dopes into ZnO by Using Molecular Orbital Calculation; Chemistry Letters 2002; 02/20/2002; pp. 580-581; The Chemical Society of Japan.	
	O10	WANG, L.G., and ZUNGER, A.; Cluster-Doping Approach for Wide-Gap Semiconductors: The Case of p-type ZnO; Physical Review Letters; 06/27/2003; pp. 256401-1 - 256401-4; Volume 90, Number 25; The American Physical Society.	
	O11	NORTON, D.P., HEO, Y.W., IVILL, M.P., IP, K., PEARTON, S.J., et al; ZnO: growth, doping and processing; Materialstoday; 06/2004; Elsevier Ltd.	
	O12	LEE, E.-C., KIM, Y.-S., JIN, Y.-G., and CHANG, K.J.; First-Principles Study of p-Type Doping and Codoping in ZnO; Journal of the Korean Physical Society; 12/2001; pp. S23-S26; Volume 39.	
	O13	MORHAIN, C., TEISSEIRE, M., VEZIAN, S., VIGUE, F., RAYMOND, F., et al; Spectroscopy of Excitons, Bound Excitons and Impurities in h-ZnO Epilayers; 09/30/2001; pp. 881-885; Volume 229, Number 2; Wiley VCH; Berlin.	
	O14	BANDYOPADHYAY, S., PAUL, G.K., ROY, R., SEN, S.K., and SEN, S.; Study of structural and electrical properties of grain-boundary modified ZnO films prepared by sol-gel technique; Materials Chemistry and Physics; 05/17/2001; pp. 83-91; Volume 74; Elsevier Science B.V.	

Examiner Signature	Date Considered
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		Application Number	10/849,347
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8

	O15	WILKINSON, J., XIONG, G., UCER, K.B., and WILLIAMS, R.T.; Lifetime and Oscillator Strength of Excitonic Luminescence in Zinc Oxide; Department of Physics, Wake Forest University, Winston-Salem, NC.	
	O16	KOBAYASHI, A., SANKEY, O.F., and DOW, J.D.; Deep energy levels of defects in the wurtzite semiconductors AlN, CdS, CdSe, and ZnO; Physical Review B; 07/15/1983; pp. 946-956; Volume 28, Number 2; The American Physical Society.	
	O17	DANEU, N., REENIK, A., and BERNIK, S.; Grain Growth Control in Sb ₂ O ₃ -Doped Zinc Oxide; Journal of the American Ceramic Society; 2003; pp. 1379-1384; Volume 86, Number 8.	
	O18	OHYAMA, M.; Sol-Gel Preparation of Transparent and Conductive Aluminum-Doped Zinc Oxide Films with Highly Preferential Crystal Orientation; Journal of the American Ceramic Society; 1998; pp. 1622-1632; Volume 81, Number 6.	
	O19	DUAN, X.L., YUAN, D.R., CHENG, X.F., SUN, H.Q., SUN, Z.H., et al; Microstructure and Properties of Co ²⁺ : ZnAl ₂ O ₄ /SiO ₂ Nanocomposite Glasses Prepared by Sol-Gel Method; Journal of the American Ceramic Society; 2005; pp. 399-403; Volume 88, Number 2.	
	O20	SOHN, K.S., HWANG, D.K., and MYOUNG, J.M.; Time Integrated/Resolved Photoluminescence of ZnO Films Deposited on Sapphire and GaAs; Japanese Journal of Applied Physics; 12/2003; pp. 7376-7378; The Japan Society of Applied Physics.	
	O21	SUN, X.W.; Optical properties of epitaxially grown zinc oxide films on sapphire by pulsed laser deposition; Journal of Applied Physics; 07/01/1999; pp. 408-411; Volume 86, Number 1; American Institute of Physics.	
	O22	BURDEN, A.P., BISHOP, H.E., BRIERLEY, M., FRIDAY, J.M., HOOD, C., et al.; Incorporating consumer-priced field emitting inks into arrays of triode devices; Solid State Electronics; 2001; pp. 987-996; Vol. 45; Printable Field Emitters Ltd.	
	O23	MINAMI, T., MIYATA, T., SHIRAI, T., and NAKATANI, T.; Electroluminescent Oxide Phosphor Thin Films Prepared by a Sol-gel Process; Mat. Res. Soc. Symp. Proc.; 2000; pp. Q4.3.1 - Q4.3.6; Vol. 621; Materials Research Society.	
	O24	QIU, C., CHEN, H., WONG, M., and KWOK, H.S.; Dependence of the Current and Power Efficiencies of Organic Light-Emitting Diode on the Thickness of the Constituent Organic Layers; IEEE Transactions On Electron Devices; 09/2001; pp. 2131-2137; Vol. 48; IEEE.	
	O25	MATSUDA, T., KAWABE, M., IWATA, H., and OHZONE, T.; Visible Electroluminescence from MOS Capacitors with Si-Implanted SiO ₂ ; IEICE Trans. Electron.; 09/11/2002; pp. 1895-1904; Vol. E85-C, No. 11.	
	O26	ONG, H.C., LI, A.S.K., and DU, G.T.; Depth profiling of ZnO thin films by cathodoluminescence; Applied Physics Letters; 04/30/2001; pp. 2667-2669; Vol. 78, No. 18; American Institute of Physics.	
	O27	WASHINGTON, P.L., ONG, H.C., DAI, J.Y., and CHANG, R.P.H.; Determination of the optical constants of zinc oxide thin films by spectroscopic ellipsometry; Applied Physics Letter; 06/22/1998; pp. 3261-3263; Vol. 72, No. 25; American Institute of Physics.	
	O28	SEKIGUCHI, T., OHASHI, N., and YAMANE, H.; Cathodoluminescence Study on ZnO and GaN; Solid State Phenomena; 1998; pp. 171-182; Vols. 63-64; Scitec Publications; Switzerland.	
	O29	KOUYATE, D., RONFARD-HARET, J.-C., and KOSSANYI, J.; Photo- and electro-luminescence of rare earth-doped semiconducting zinc oxide electrodes: Emission from both the dopant and the support; Journal of Luminescence; 1991; pp. 205-210; Vol. 50; Elsevier Science Publishers B.V.	

Examiner Signature		Date Considered	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) Sheet 3 Of 9		Complete if Known	
		Application Number	10/849,347
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8

	O30	KOSSANYI, J., KOUYATE, D., POULIQUEN, J., RONFARD-HARET, J.C., VALAT, P., et al.; Photoluminescence of Semiconducting Zinc Oxide Containing Rare Earth Ions as Impurities; Journal of Luminescence; 1990; pp. 17-24; Vol. 46; Elsevier Science Publishers B.V. (north-Holland).	
	O31	WANG, Y.G., LAU, S.P., LEE, H.W., YU, S.F., TAY, B.K., et al.; Photoluminescence study of ZnO films prepared by thermal oxidation of Zn metallic films in air; Journal of Applied Physics; 07/01/2003; pp. 354-358; Vol 94, No. 1; American Institute of Physics.	
	O32	YU, S.F., YUEN, C., LAU, S.P., WANG, Y.G., LEE, H.W., et al.; Ultraviolet amplified spontaneous emission from zinc oxide ridge waveguides on silicon substrate; Applied Physics Letter; 11/24/2003; pp. 4288-4290; Vol. 83, No. 21; American Institute of Physics.	
	O33	XIONG, G., WILKINSON, J., LYLES, J., UCER, K.B., and WILLIAMS, R.T.; Luminescence and stimulated emission in zinc oxide nanoparticles, films, and crystals.	
	O34	ONG, H.C., DAI, J.Y., and DU, G.T.; Studies of electronic structure of ZnO grain boundary and its proximity by using spatially resolved electron energy loss spectroscopy; Applied Physics Letter; 07/08/2002; pp. 277-279; Vol. 81, No. 2; American Institute of Physics.	
	O35	AGNE, T., GUAN, Z., LI, X.M., WOLF, H., and WICHERT, T.; Incorporation of the Donor Indium in Nanocrystalline ZnO; phys. stat. sol.; 2002; pp. 819-823; Vol. 229; WILEY-VCH Verlag Berlin GmbH; Berlin.	
	O36	QADRI, S.B., KIM, H., HORWITZ, J.S., and CHRISEY, D.B.; Transparent conducting films of ZnO-ZrO ₂ : Structure and properties; Journal of Applied Physics; 12/01/2000; pp. 6564-6566; Vol. 88, No. 11; American Institute of Physics.	
	O37	HAN, J., MANTAS, P.Q., and SENOS, A.M.R.; Grain growth in Mn-doped ZnO; Journal of the European Ceramic Society; 2000; 2753-2758; Vol. 20.	
	O38	JIN, Y., ZHANG, B., YANG, S., WANG, Y., CHEN, J., et al.; Room temperature UV emission of Mg _{1-x} Zn _x O films; Solid State Communications; 2001; pp. 409-413; Vol. 119; Elsevier Science Ltd.	
	O39	PETRIK, N.G., ALEXANDROV, A.B., and VALL, A.I.; Interfacial Energy Transfer during Gamma Radiolysis of Water on the Surface of ZrO ₂ and Some Other Oxides; J. Phys. Chem. B; 2001; pp. 5935-5944; Vol. 105; American Chemical Society.	
	O40	COUNIO, G., ESNOUF, S., GACON, T., and BOILLOT, J.-P.; CdS:Mn Nanocrystals in Transparent Xerogel Matrices: Synthesis and Luminescence Properties; J. Phys. Chem.; 1996; pp. 20021-20026; Vol. 100; American Chemical Society.	
	O41	STRAVREV, K., KYNEV, K., ST. NIKOLOV, G., and DYAKOVITCH, V.A.; Semiempirical Assignment of the Electron Transitions in Manganese(II)-Doped II-VI Compounds; J. Phys. Chem. Solids; 1987; pp. 841-844; Vol. 48, No. 9; Pergamon Journals Ltd.	
	O42	FALCONY, C., ORTIZ, A., DOMINGUEZ, J.M., FARIAS, M.H., COTA-ARAIZA, L. et al.; Luminescent Characteristics of Tb Doped Al ₂ O ₃ Films Deposited by Spray Pyrolysis; J. Electrochem Soc.; 01/1992; pp. 267-271; Vol. 139, No. 1; The Electrochemical Society, Inc.	
	O43	BACHIR, S., KOSSANYI, J., SANDOULY, C., VALAT, P., and RONFARD-HARET, J.C.; Electroluminescence of Dy ³⁺ and Sm ³⁺ Ions in Polycrystalline Semiconducting Zinc Oxide; J. Phys. Chem; 1995; pp. 5674-5679; Vol. 99; American Chemical Society.	
	O44	BACHIR, S., KOSSANYI, J., and RONFARD-HARET, J.C.; Electroluminescence of Ho ³⁺ Ions in a ZnO Varistor-Type Structure; Solid State Communications; 1993; pp. 859-863; Vol. 89, No. 10; Elsevier Science Ltd.; Great Britain.	
	O45	CHAKRABARTI, S., GANGULI, D., CHAUDHURI, S., and PAL, A.K.; Crystalline magnesium oxide films on soda lime glass by sol-gel processing; Materials Letters; 05/2002; pp. 120-123; Vol. 54; Elsevier Science B.V.	

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Substitute for form 1449B/PTO <h2 style="text-align: center; margin: 10px 0;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="text-align: center; margin: 10px 0;">(use as many sheets as necessary)</p> <p>Sheet 4 Of 9</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; padding: 2px;">Complete if Known</th> </tr> <tr> <td style="padding: 2px;">Application Number</td> <td style="padding: 2px;">10/849,347</td> </tr> <tr> <td style="padding: 2px;">Filing Date</td> <td style="padding: 2px;">May 19, 2004</td> </tr> <tr> <td style="padding: 2px;">First Named Inventor</td> <td style="padding: 2px;">Robert H. Burgener, II</td> </tr> <tr> <td style="padding: 2px;">Group Art Unit</td> <td style="padding: 2px;">2822</td> </tr> <tr> <td style="padding: 2px;">Examiner Name</td> <td style="padding: 2px;">Kevin M. Picardat</td> </tr> <tr> <td style="padding: 2px;">Attorney Docket Number</td> <td style="padding: 2px;">3398.2.8</td> </tr> </table>	Complete if Known		Application Number	10/849,347	Filing Date	May 19, 2004	First Named Inventor	Robert H. Burgener, II	Group Art Unit	2822	Examiner Name	Kevin M. Picardat	Attorney Docket Number	3398.2.8
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O46		ARKLES, B.; Commercial Applications of Sol-Gel-Derived Hybrid Materials; MRS Bulletin; 05/2001; pp. 402-407.	
O47		MURRAY, C.E., NOYAN, I.C., and MOONEY, P.M.; Mapping of strain fields about thin film structures using x-ray microdiffraction; Applied Physics Letters; 11/17/2003; pp. 4163-4165; Vol. 83, No. 20; American Institute of Physics.	
O48		MODENA, S., SORARU, G.D., BLUM, Y., and RAJ, R.; Passive Oxidation of an Effluent System: The Case of Polymer-Derived SiCO; Journal of the American Ceramic Society; 2005; pp. 339-345; Vol. 88.	
O49		NOYAN, I.C., WANG, P.-C., KALDOR, S.K., and JORDAN-SWEET, J.L.; Deformation field in single-crystal fields semiconductor substrates caused by metallization features; Applied Physics Letters; 04/19/1999; pp. 2352-2354; Vol. 74, No. 16; American Institute of Physics.	
O50		NOYAN, I.C., JORDAN-SWEET, J., LINIGER, E.G., and KALDOR, S.K.; Characterization of substrate-thin-film interfaces with x-ray microdiffraction; Applied Physics Letters; 06/22/1998; pp. 3338-3340; Vol. 72, No. 25; American Institute of Physics.	
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		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8

	O62	NARAZAKI, A., TANAKA, K., HIRAO, K., HASHIMOTO, T., NASU, H., et al.; IR and XPS Studies on the Surface Structure of Poled ZnO-TeO ₂ Glasses with Second-Order Nonlinearity; Journal of the American Ceramic Society; 2001; pp. 214-217; Vol. 84.	
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O78		WANG, X., DU, G., GU, C., JIA, J., LI, X., et al.; Two-step growth of ZnO thin films on diamond/Si low-pressure metal-organic chemical vapour deposition; J. Phys. D: Appl. Phys.; 2002; pp. L74-L76; Vol. 35; IOP Publishing Ltd., United Kingdom.	
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O87		MANTAS, P.Q., and BAPTISTA, J.L.; The Barrier Height Formation in ZnO Varistors; Journal of the European Ceramic Society; 1995; pp. 605-615; Vol. 15; Elsevier Science Limited, Great Britain.	
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O94		SENGER, R.T., and BAJAI, K.K.; Binding energies of excitons in polar quantum well heterostructures; Physical Review B; 2003; pp. 205314-1 -205314-9; Vol. 68; The American Physical Society.	
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O96		MUTH, J.F., BROWN, J.D., JOHNSON, M.A.L., YU, Z., KOLBAS, R.M., et al.; Absorption coefficient and refractive index of GaN, AlN and AlGaIn alloys; 1999; MRS Internet J. Nitride Semicond.	
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O99		NEETHLING, J.H., SCRIVEN, G.J., and KREKELS, T.; A TEM investigation of Zn ₃ As ₂ grown on (001) and (111) InP by MOVPE; Journal of Materials Science; 2001; pp. 3997-4002; Vol. 36; Kluwer Academic Publishers.	
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O107		XIONG, G., WILKINSON, J., MISCHUCK, B., TUZEMEN, S., UCER, K.B., et al.; Control of p- and n-type conductivity in sputter deposition of undoped ZnO; Applied Physics Letters; 02/18/2002; pp. 1195-1197; Vol. 80, No. 7; American Institute of Physics.	
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O110	LEE, J-M., KIM, K.K., PARK, S-J., and CHOI, W.K.; Low-resistance and non-alloyed ohmic contacts to plasma treated ZnO; Applied Physics Letters; 06/11/2001; pp. 3842-2844; Vol. 78, No. 24; American Institute of Physics.	
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O113	NAKAHARA, K., TAKASU, H., FONS, P., YAMADA, A., IWATA, K., et al.; Growth of N-doped and Ga+N-codoped ZnO films by radical source molecular beam epitaxy; Journal of Crystal Growth; 2002; pp. 503-508; Vol. 237-239; Elsevier Science B.V.	
O114	RECNIK, A., DANEU, N., WALTHER, T., and MADER, W.; Structure and Chemistry of Basal-Plane Inversion Boundaries in Antimony Oxide-Doped Zinc Oxide; Journal of the American Ceramic Society; 2001; pp. 2357-2668; Vol. 84.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	10/849,347
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8
Sheet	9	Of	9

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